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JP6157003A2: PRODUCTION OF HYDROGEN UTILIZING IRON

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**Applicant's
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Abstract:

Purpose: To effectively generate hydrogen and utilize used scraps as a raw material for steel manufacturing by separately introducing oxygen gas from specific positions between respective introduction positions of a gas containing steam and oxygen and an iron-based raw material capable of catalytically reacting in a countercurrent state.

Constitution: An iron-based raw material (e.g. scrap) 12 housed in a hopper 10 is continuously fed from the top into a reactional column 14. On the other hand, oxygen gas 13 is fed from the middle part of the reactional column 14 and heat is generated while oxidizing the charged iron-based raw material to keep the whole at a prescribed temperature. A gas 15 containing steam and oxygen gas is fed from the bottom of the reactional column 14 and made to react with the iron-based raw material to generate hydrogen gas. The oxygen gas 13 is charged at a position (10) within the range of $\pm 0.5L$ when the distance between the charging position of the iron-based raw material and the charging position of the gas containing the steam and oxygen is L. The ratio of the quantity of the oxygen charged together with the steam to the charged quantity of the oxygen is (1-5):1. The generated hydrogen gas (H₂/H₂O-based mixed gas) 16 is led to a separating column 20 to separate and recover the hydrogen gas by cooling the steam.

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**Patent
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